Aug. 5, 1924. 1,503,735

P. K. WILLIAMS

MECHANICAL TOY

Filed March 17, 1923

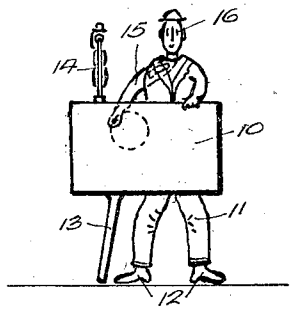


FIG. 1

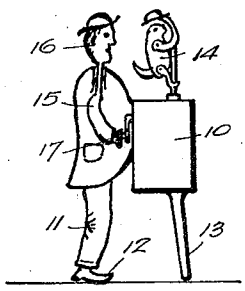


FIG. 2

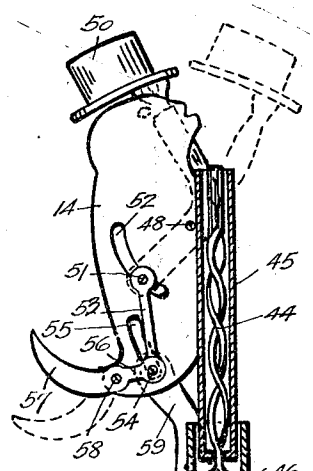


FIG. 5

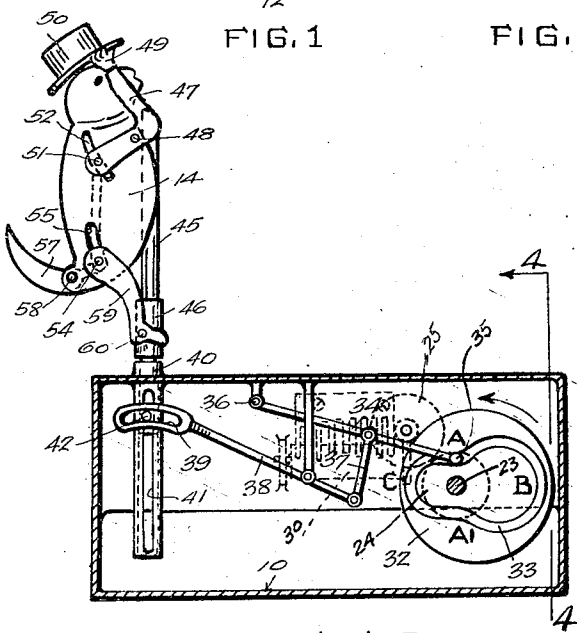


FIG. 3

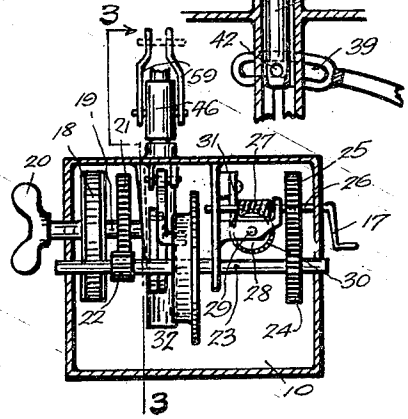


FIG. 4

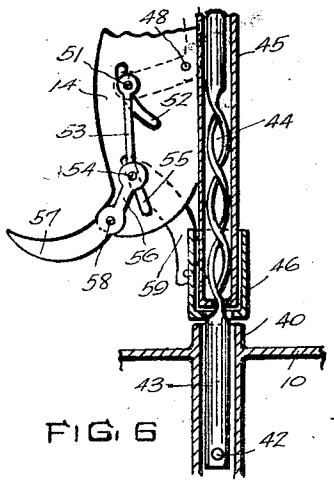


FIG. 6

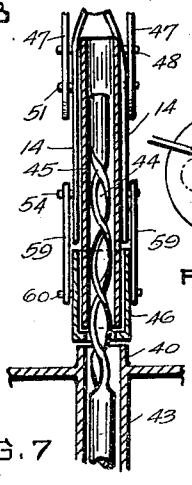


FIG. 7

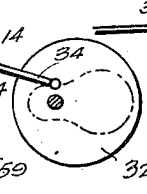


FIG. 8

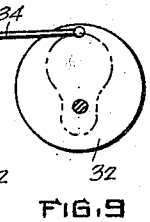


FIG. 9

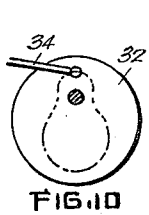


FIG. 10

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UNITED STATES PATENT OFFICE.

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MECHANICAL TOY.

Application filed March 17, 1923. Serial No. 625,754.

To all whom it may concern:

Be it known that I, PETER K. WILLIAMS, a citizen of the United States of America, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Mechanical Toys, of which the following is a specification.

My present invention relates generally to toys and more particularly to the class of figured toys, my object being the provision of a small mechanical and musical toy representative of the well known organ grinder and his monkey, and a further object is the provision of a simple inexpensive toy of this nature which will be strong and durable and which embodies spring actuated means for bringing about the desired movement of the several movable parts.

In the accompanying drawing which illustrates my present invention and forms a part of this specification,

Figure 1 is a front elevation of the complete toy,

Figure 2 is a side elevation thereof,

Figure 3 is a longitudinal section through the box substantially along the line 3—3 of Figure 4,

Figure 4 is a transverse vertical section through the box substantially along the line 4—4 of Figure 3,

Figures 5, 6 and 7 are vertical sectional views through the movable figure supporting and actuating means, and

Figures 8, 9 and 10, are detail diagrammatic views illustrating the actuating eccentric in different positions.

Referring now to these figures and particularly to Figures 1 and 2, I propose a toy including among other things a music box 10 representative of the usual hand organ, attached to one side of which and adjacent to one end is an upright Figure 11 of a man, representative of the organ grinder, having the legs of this figure below the box 10 and terminating in spaced apart feet 12 which, with the single depending leg 13 of the box 10 form the necessary three point support for the toy as a whole.

It will also be noted from Figures 1 and 2 that there is mounted upon the box a movable Figure 14 representative of a monkey and that the body of the Figure 11 representative of the organ grinder is slotted at its upper portion to pivotally support an intermediately slotted lever 15, one angular upstanding end of which carries the head 16 and the opposite end of which depends on an incline and forms one arm of a figure, the lower extremity of this latter end movably engaging a crank 17 so that the Figure 11 thus appears to be in the act of turning the handle of an organ during rotation of the crank 17, the arm 15 as well as the head 16 swinging during this movement.

Within the box 10 there is certain mechanism shown particularly in Figure 4 and including a spring motor 18 upon a shaft 19 actuated for winding purposes by an externally projecting key 20, and connected by large and small gears 21 and 22 to a shaft 23 upon which the small gear 22 is mounted. This latter shaft is connected by gears 24 and 25 to the crank shaft 26 upon the outer end of which the before mentioned crank 17 is mounted and this crank shaft 26 has upon its inner end a worm 27 engaging the form wheel 28 upon the shaft 29 of the musical apparatus, which may be of any desired type, as for instance the well known toothed cylinder indicated at 30, operating against tuned spring fingers 31.

There is also mounted on the shaft 23 intermediate the ends of the latter, an eccentric disc 32 having an eccentric groove 33 for the control and actuation of a lever 34 best seen in Figure 3. This lever is provided at one end with a roller 35 disposed in the eccentric groove 33 and its opposite end is pivoted at 36 within the box 10. Intermediate its ends the lever 34 is flexibly connected by a link 37 to one end of an actuating lever 38 whose opposite end is curved and provided with an arcuate slot 39.

Through the top of the box 10 a vertical bearing tube 40 depends, that portion of the bearing tube within the box 10 having a vertical slot 41 outwardly through which a guide pin 42 extends into the slot 39 of the actuating lever. This guide pin projects laterally from the lower end of an actuating stem 43 disposed upright in the bearing tube 40 and projecting substantially above the latter, with its upper portion flattened and spirally twisted as at 44 in order to provide for the rotation of an elongated sleeve 45 disposed upright above the top of the box 10 and to which the body 14 of the monkey is attached. This sleeve 45 has its lower end closed except for a slot of a width adapted to slidably receive the flattened and twisted portion 44 of the actuating stem, and the

lower end of the sleeve 45 is movable in a relatively short and larger sleeve 46 through the base of which the stem 44 is freely shiftable in the direction of its length and rotatable.

The body 14 of the monkey-like figure consists of two side plates upon opposite sides of which angular arms 47 are fulcrumed as at 48, the upper outer ends of these arms having hands 49 supporting a hat 50 which upon swinging of the arms 47 upon their fulcrum 48 is shifted above and forwardly beyond the head of the Figure 14 as seen by a comparison of the full and dotted lines in Figure 5.

The lower inner ends of the arms 47 are connected by a pin 51 which passes through arcuate slots 52 in the body of the Figure 14, this pin 51 being movably engaged by the upper end of a connecting rod 53 depending between the side plates forming the body 14, one of which at the near side of the figure is removed in Figures 5 and 6, and is movably engaged at its lower end with a pin 54 extending through lower arcuate slots 55 in the body 14 of the figure. Between the side plates of the Figure 14 the pin 54 is movably engaged by the inner arm 56 of the tail 57, the latter of which is fulcrumed at 58, and outwardly beyond the sides of the body 14, the pin 54 is movably engaged with the upper ends of legs 59 whose lower ends are pivotally connected at 60 to diametrically opposite points of the lower outer sleeve 46.

Thus in operation when the spring motor 18 is wound, its action is to rotate shaft 19 and actuate shaft 23 through the gears 21 and 22. Shaft 23 in turn actuates the crank shaft 26 through the gears 24 and 25 and thus the musical parts, for instance the elements 30 and 31 are placed in action and the crank 17 rotated, which latter causes swinging movement of one arm 15 and the head 16 of the Figure 11 attached to the box 10.

At the same time rotation of shaft 23 actuates the eccentric disc 32 and, through lever 34 and connecting rod 37, the actuating lever 38 will have its outer slotted end 39 raised and lowered, it being noted that the shape of the eccentric groove 33 is such that during each complete rotation of disc 32, the slotted end 39 of the actuating lever will be twice raised and lowered and will be elevated to the same point during each upward movement and will during one lowering movement proceed to a lower level than during the other lowering movement. Thus when the roller 35 is at either of the points marked A in Figure 3 and shown also in Figure 8, the slotted end 39 of the actuating lever will be at the point of maximum lift. When the roller 35 is at the point B of Figure 3 corresponding to the position shown in Figure 9, the slotted end 39 will be at the lowest point of lowering movement while when the roller is at the point C the slotted end of the lever will be in an intermediate position although at the lowest point of its travel during alternate downward movements.

It is obvious that starting with the positions shown in Figures 3 and 5 wherein the slotted end 39 of the lever and also the actuating stem 43 are at the upper limit of their movement, further rotation of the disc 32 in the direction of the arrow Figure 3 will start movement of the stem 43 in a downward direction. The initial result of this movement will be to draw the upper sleeve 45 downwardly as far as it will go into the sleeve 46 and thus against the base of the latter as shown in Figure 6, before the spirally twisted portion 44 commences to rotate the sleeve 45 and it is likewise obvious that during this downward movement of the sleeve 45 the body 14 will also be shifted downwardly and the transverse pins 51 and 54 will be forced upwardly in the arcuate slots 52 and 55 so that the tail 57 will be lowered and the arms 47 shifted to swing the hat 50 forwardly beyond the Figure 14 to the position shown in dotted lines in Figure 5. During continued rotation of the disc 32 and the movement of the roller 35 in the eccentric groove from the point A to the point B of Figure 3, the sleeve 45 will after the lowering movement just above described, continue to rotate as the spiral portion 44 of the stem descends through the base of the sleeve and during this rotation of the sleeve 45 the Figure 14 will continue to swing in a circle, sleeve 46 rotating with the same by virtue of its freedom of movement around the stem 43. When the roller 35 reaches the point B of the eccentric groove and proceeds from this point to the point A′, the slotted outer end 39 of the actuating lever and consequently the stem 43 start the initial upward movement and at the commencement of this movement it is obvious that the sleeve 45 will first be forced upwardly to the position of Figure 5 constituting the limit of its upward movement by virtue of its attachment to the Figure 14. During this movement the tail 57 will be elevated and the hat 50 shifted to the position shown in Figure 3 and in full lines in Figure 5 and during the further upward movement of the stem until point A′ is reached, the sleeve 45 along with the Figure 14 and the sleeve 46 will be rotated in a reverse direction to the preceding rotation.

When the point A′ is passed and between this point and the point C the stem 43 will be lowered to a sufficient extent only to lower the sleeve 45 and consequently the Figure 14, shifting the tail 57 downwardly and shifting the arms 47 and hat 50 forwardly. The stem will not be lowered sufficiently to cause rotation of the sleeve 45 and when point C

has been passed and between this point and the point A the sleeve 45 and the figure will be raised so that the parts will be restored to the position shown in Figure 3 and in full lines in Figure 5.

Thus during alternate downward movements of the actuating stem the figure will become animated in a vertical direction and will also be caused to swing around the stem, and during the other alternate downward movements the figure will merely be animated in a vertical direction without such swinging movement or rotation it being obvious that these several movements take place during animation of the movable parts of the supporting figure and also during action of the musical parts.

The toy as a whole will thus be highly amusing and the means by which movement of the parts is produced are, considering the nature of the movements, comparatively simple and will be strong and durable in operation.

I claim:

1. A self-supporting toy of the character described including a box having internal music producing means and a pendent supporting leg, a figure disposed upright adjacent and attached to the box, having pendent legs cooperating with the pendent supporting leg of the box and forming therewith a three-point contact to permit the figure to stand in an upright position without additional support, said figure also having movable parts including an arm, a figure movable vertically and rotatable on the box and simulating a monkey, and mechanism within the box for simultaneously actuating the last mentioned figure operating the said music producing means and shifting the movable parts of the supporting figure as described.

2. A self-supporting toy of the character described including an upright figure having movable parts, a box attached to the figure having internal musical parts, said box having a single supporting leg and said figure having a pair of supporting legs coacting with the leg of the box and forming therewith a three-point supporting contact to hold the toy upright without further support, a movable figure on the box simulating a monkey and means within the box for simultaneously actuating the last mentioned figure, the musical means within the box and the movable parts of the first mentioned figure as described.

3. In a toy, a support, a spirally twisted stem rising above the support, means within the support for shifting the stem vertically without rotating the same, a tubular figure holder rotatable around the stem having a slot in its lower end through which the stem shifts, a figure rotatable with said holder and in movable connection therewith, and a member movable on the lower portion of the stem and with which the said figure is also in movable connection.

4. In a toy, a support, a spirally twisted stem rising above the support, means within the support for shifting the stem vertically without rotating the same, a tubular figure holder rotatable around the stem having a slot in its lower end through which the stem shifts, a figure rotatable with said holder and having a body provided with upper and lower slots, arms fulcrumed on the body whose outer ends are swingable above the body, a hat supported by said outer ends, a pin connecting the inner ends of the arms and extending through the upper slots, a sleeve around the lower portion of the stem, legs depending from the body of the figure and pivotally connected at their lower ends to said sleeve, a pin connecting the upper ends of said legs and extending through the lower slots, and links connecting the leg and arm pins, as described.

In testimony whereof I have affixed my signature.

PETER K. WILLIAMS.